

## Chapter 8 - Mental Strategies for Addition and Subtraction

### Numberline addition 6 minutes and 3 seconds

The empty number line is an effective way of developing mental strategies for addition and subtraction because it helps children to make connections between the picture of numbers and the steps on the number line with the manipulation of the symbols. It's an opportunity for children to use the number facts they know and the skills that they're confident with to develop their...their own strategies.

I'm going to show you a few examples, here's my first one, two hundred and fifty-six added to sixty-two. Now here's an empty number line, an empty number line is a number line where you don't have to worry about scale, you don't have to worry about the distance between two numbers on the number line. All that matters is that when you write numbers on this line, the numbers are in the right order from left to right. I'm going to add two hundred and fifty-six to sixty-two so let's put the two hundred and fifty-six down here as a point on the number line. Now I'm looking at the sixty-two that I have to add to that and I'm feeling confident that I could manage adding fifty so I'm going to break the sixty-two down into two steps, add fifty and then add twelve. Now you may choose different steps, that's fine, umm...children should use the...the skills and the knowledge they're confident with and break down the addition into whatever steps they find they are most comfortable with. Well here I go, I'm going to add fifty-six, err...sorry, two hundred and fifty-six, I'm going to add fifty. Here we go add fifty to that three hundred and six, I can do that mentally and now I'm left with adding twelve. Three hundred and six add twelve, well that's easy enough because six add twelve is just eighteen, three hundred and six add twelve, three hundred and eighteen and there's the answer to that addition. Two hundred and fifty-six added to sixty-two is three hundred and eighteen and we've done that in two steps of adding fifty and then adding twelve.

Well there are other strategies you can use. Let's look at this example here of two hundred and fifty-six add sixty-eight. There's the empty number line let's put two, fifty six on the end here of the...on the left. Now I'm thinking hmm add sixty-eight that's quite tricky, it takes us beyond three hundred and in the units position I have six add eight which is more than ten so I'm going to break this down into some easier steps. And I'm choosing

this time to start by adding four to the two hundred and fifty-six, which leaves me with a further sixty-four to add on later. Now of course the reason I add four is that it takes me very nicely up to two hundred and sixty which is a very friendly number. That's the next multiple of ten and I'm using that as a stepping stone. I now have to add sixty-four to that. I may be able to do that mentally, but if not, I could break it down, let's see... if I add forty, that takes me up to the next multiple of a hundred and then I have a further twenty-four to add so that's what I'm going to do. Here I go add the forty to two hundred and sixty and that takes me along to three hundred and adding to three hundred is ve..very easy indeed, three hundred add twenty-four. There we are three hundred and twenty four as the answer to that addition. So I've broken that down into three steps and the number line gives me a picture of what I might be doing mentally. I'm adding four to get to the stepping stone two hundred and sixty, adding forty to get to my next stepping stone-three hundred and then adding the remaining twenty-four to get the answer three hundred and twenty four.

Again, there are many other ways in which you might choose to do this, use whatever works best for you. Now here we go with a third example, two hundred and fifty-six add forty-nine. There's the two fifty-six on the number line. Now immediately I see forty-nine I think now I could add fifty which is quite close to forty-nine which is always quite easy to do, but then I would need to compensate. So I'm thinking to myself, add forty-nine could be done by adding fifty and then subtracting one. Here we go, two fifty six add fifty, takes me up to three hundred and six again, but now I compensate because I've added one more than I need. I need to subtract that one and that takes me back to three hundred and five, which is the answer to that addition.

There we are, the empty number line, three different strategies there and many others that you might choose to use. An excellent way of building understanding of mental strategies for addition.